

## **REMARKS**

Claims 12-13, 17 and 21-27 are pending in the application.

Claim 12 is amended above to more clearly set forth the Applicants' invention.

New claims 24-27 are added to the application. The dependency of claims 21-23 are amended accordingly.

Claims 14 and 20 are cancelled from the application without prejudice.

No new matter has been added to the application by way of these claim amendments.

The examiner's claim rejections and objections are overcome or they are traversed as set forth below.

### **I. THE CLAIM 14 OBJECTION/REJECTION**

The examiner's objection to and rejection of claim 14 is overcome by cancelling claim 14 from the application without prejudice.

### **II. THE ANTICIPATION REJECTION OF CLAIMS 20-21 AND 23**

The examiner rejected claims 20-21 and 23 for being anticipated by Davidson et al. (USP 6,321,441). The rejected claims are amended above in a manner that clearly distinguishes them from the cited prior art.

Davidson is directed to articles made by assembling different pre-manufactured parts. Independent claim 20 is cancelled above and replaced with new independent claims 24-25 both of which clarify that the claimed articles are formed as a single piece by injection molding. Davidson et al. does not disclose forming any combination of parts – e.g., feature and backing combination – by injection molding. Instead Davidson relies upon the assembly in individually manufactured parts to form an article. For at least this reason, pending claims 21-26 are not anticipated by Davidson et al.

### **III. THE OBVIOUSNESS REJECTIONS**

#### **A. The Rejection of Claims 12-14**

The examiner rejected claims 12-14 (now claims 12-13) over a combination of no less than 5 different prior art references – Sweeny (EP 0376010) in view of Marton et al (USP 4,241,129) and further in view of Luch (USP 4,429,020); Tanikita et al. (USP 5,833,889; and

Grefenstein at al. (USPA 2006/29809). It is the examiner's position that Sweeny teaches automotive quality laminate articles comprising a pre-shaped metal veneer and inner substrates formed in-situ as well as many of the specific material recited in the claims. The examiner notes that Sweeny does not teach a resin layer having a thickness no greater than 2.5mm and relies upon Marton for disclosing this feature. The examiner further notes that Sweeny does not disclose the use of glass filled nylon resin and relies upon Luch for providing this teaching. Finally, the examiner notes that Sweeny does not disclose the amount of glass fiber and relies upon Tanikita et al. for providing this teaching.

Claims 12-13 are non-obvious for each of the reasons recited below.

#### **1. Marton Has No "Thin" Resin Layer On The Metal Second Surface**

Claims 12-13 are non-obvious and patentable because Marton does not disclose a thin resin layer attached to the metal layer second surface as claimed. The examiner's reliance on Marton for supplying "the thickness of the thermoplastic polymer in the range of 2 to 10,000 micrometers" is misplaced because the disclosed Marton layer is a polymer outer layer that is associated with what would be the decorative surface of the metal layer and not with the metal layer second surface as claimed so claims 12-13 are nonobvious over the recited combination of references.

Marton discloses a structure (shown in the Figure) including a normally solid thermoplastic polymer outer layer 3, a soft metal material 5 and an adhesive organic polymer adhered to the soft metal layer 5. The Marton polymer layer thickness recited by the examiner is for the "polymer substrate layer" which corresponds to polymer outer layer 3 of Marton. Thus, if the examiner is taking the position that polymer outer layer 3 corresponds to the claimed resin backing layer then that is wrong. The Marton polymer layer 3 is attached to what would correspond to the metal sheet decorative surface of the claimed invention. Thus, Marton does not disclose resin layer having the claimed thickness associated with the metal sheet second surface and claims 12-13 are non-obvious for at least this reason.

#### **2. Marton And Sweeny Are Not Combinable**

Should the examiner somehow take the position that it would be obvious to modify the Sweeny resin backing to have the thickness of the Marton polymer outer layer 3, then the examiner would be combining the references in a manner that defies the teachings of the reference and that is clearly motivated by a hindsight application of the prior art. The Marton

article has a clear polymer outer layer that is adhered to a metal coating that in turn is backed with an adhesive polymer that in turn is supported by a thick polymeric filler. A purpose of the polymer outer layer is to protect the metal layer while making the metal layer visible to the observer. Sweeney is directed to an injection molded part that has a first layer and a second injection molded resin backing.

The examiner's obviousness rejection of claims 12-13 is also unfounded because the examiner has combined the Sweeney and Marton in a manner that defies logic. Sweeney and Marton are directed to different types of products made by different methods. Sweeney discloses an injection molding method for manufacturing a part. The Marton part on the other hand is not manufactured by injection molding. Indeed, the Marton device disclosed in the figure includes a cavity that is completely filled with a polymeric filler material to give the entire structure strength. Thus, if there is any correlation to be made between the elements of the articles of the two references, then it is the polymeric filler material 8 of Marton that corresponds to the resin backing of Sweeney in material type and function and one of skill in the art at the time of the invention would make such a correlation. And since the polymeric filler material of Marton is much thicker than the currently claimed resin layer. Thus Sweeney and Marton when combined as one skilled in the art at the time of the invention do not disclose or suggest an article with a very thin resin material layer associated with the second surface of a metal sheet and claims 12-13 are nonobvious for this reason as well.

### **3. The Resin Layer Thickness Is Not A Result Of Optimization**

The examiner next takes the position that it would have been obvious to one skilled in the art at the time of the invention to adjust the thickness and the glass fiber content for the intended application since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

The applicants are not claiming an optimized value in independent claim 12. Indeed, the examiner has not shown any prior art that would suggest that minimizing resin thickness is a routine optimization step in injection molding. Instead, the inventors discovered that using specific resins in an injection molding process allows them to eliminate delamination problems caused by differential thermal expansion and contraction of the metal and resin in the injection mold when the article is cooling. (See Specification at page 14, lines 8-16). This allowed the inventors to manufacture trim metal pieces with thinner resin backings than were common in the

art at the time of the invention. Moreover, the selection of the claimed glass filled nylon resin from a variety of use and available resin types is not obvious from the prior art because it results in the unexpected and heretofore unappreciated result identified above and claims 12-13 are non-obvious for this reason as well.

#### **B. The Rejection of Claim 17 Over Sweeny And Marton**

The examiner rejected claim 17 for being unpatentable over Sweeny in view of Marton. Claim 17 is nonobvious and patentable for the same reasons recited in Section III(A) above. In particular, claim 17 is nonobvious at least because:

- The Marton polymer surface layer is not the same as or equivalent to the Sweeny resin layer and, therefore, the examiner has not made out a *prima facie* case of obviousness.
- Marton is not properly combinable with Sweeny because the Sweeny articles are made by injection molding while the Marton articles are not. Therefore, one skilled in the art at the time of the invention would have no reason to combine the references as the examiner has. Ultimately, one of skill in the art would not consider the polymer surface layer of Marton to be the equivalent of the injection molded backing layer of Sweeny.
- The examiner's optimization argument is traversed as set forth above because the claimed thickness is not an optimized feature. Instead, it is an unexpected result of the nonobvious selection of a glass filled nylon resin as the injection molding resin of the claimed invention.

#### **C. The Rejection of Claims 12-14 Over Bosse et al.**

The examiner rejected claims 12-14 (now claims 12-13) for being unpatentable over Bosse et al. (EP 0936044). Bosse does not render claims 12-13 obvious for several reasons.

A first reason Bosse does not render claims 12-13 obvious is because the examiner has not made out a *prima facie* case of obviousness. It is the examiner's position that Bosse teaches using a preformed metal sheet insert having a first and second surface in an injection molding process. However, Bosse does not disclose using a preformed metal sheet. Instead, Bosse uses a flat metal sheet 3 in the injection molding step as shown in Figure 3. During the injection molding, resin injected into the mold forces the flat metal sheet against counter shape 44 of Figure 3 resulting in deformation and shaping of flat metal sheet in the final product shown in

Figure 4.

In contrast, the claims are directed to a product made from a preformed and preshaped metal sheet. Thus Bosse does not disclose all of the claimed features that the examiner alleges and claims 12-13 are nonobvious and patentable.

The examiner also takes that position that Bosse does not teach a resin layer having a thickness of no greater than 2.5 millimeters but that it would have been obvious to one having ordinary skill in the art at the time of the invention to optimize the resin layer to the claimed thickness by adjust the thickness of the resin layer for intended application.

The examiner's position in this regard is incorrect and claims 12-13 must be allowed over Bosse. Bosse discloses a rigid structural element for a sporting article such as a in-line skate. It would not be obvious from Bosse to make the resin layer as thin as possible because the invention is directed to the manufacture of a rigid structural element for sports article that will undergo quite a bit of stress. Thus, one of ordinary skill in the art at the time of the invention would understand from Bosse that it could be detrimental to the rigid structural element to reduce the thickness of the resin layer to a point where it could fail under normal operation and would not be motivated to reduce the thickness of the resin layer.

Moreover, as noted above, the one problem faced by the inventors was delamination of injection molded pieces including a metal layer due to differential thermal expansion and contraction of the parts during the injection molding process. The delamination could be minimized by using thicker resin layers as backing materials. However, the inventors discovered that particular resins had expansion and contraction properties similar to the metal layer thereby allowing for the use of thinner resin layers as backing materials without encountering delamination. Therefore, the claimed invention is not based upon an optimization of thicknesses. Instead, it is based upon the inventor's discovery that a particular resin has properties that allow for thinner resin layers in automobile trim level pieces.

**D. The Rejection of Claim 17 Over Bosse in View of Tanikita & Hashimoto**

The examiner rejected claim 17 for being unpatentable over Bosse in view of Tanikita and Hashimoto. Claim 17 is nonobvious and patentable over the cited prior art for at least the same reasons recited in Section III(C) above.

**E. Claims 20-23 Are Not Obvious**

The examiner rejected claims 20-23 for being obvious over Bowen (GB 2027636) in

view of Vuilleumier (USP 5,220,541). It is the examiner's position that Bowen discloses all of the elements of claims 20-23 except for "a feature formed on the insert outside of the resin feature formed in the holes". The examiner relies upon Vuilleumier for supplying this missing teaching. In particular the examiner states that the features on the dial plate supply this teaching.

The examiner's rejection is overcome by cancelling independent claim 20 from the application and replacing it with new independent claims 24-25.

Moreover, claims 21-26 are non-obvious and patentable over these references because:

- Vuilleumier does not disclose the claimed "at least one feature formed in the insert". What Vuilleumier discloses is a feature formed "on" the watch face. This is not the same as a feature formed "in the insert" which is the case of Vuilleumier would be a feature formed in the watch face. Such feature forming "in the insert" is shown, for example, in Figure 12B where features 74 are formed in the insert during extrusion by resin forcing the insert into cavities 68 in the mold. Vuilleumier discloses no such features and claims 20-23 are non-obvious and patentable because the examiner has not made out a prima facie case of obviousness. The claims are amended above in a manner that further distinguishes the claimed invention from the cited references.
- Claim 21 is independently patentable because the cited prior art does not disclose a piece wherein the insert is a preformed skin or a preformed metal.
- Claim 22 is independently patentable because the cited prior art does not disclose a piece in which the insert is a combination of a preformed skin layer and a preformed metal layer.

#### **F. The Rejection Of Claims 20-23 Over Davidson In View of Toyooka**

The examiner rejected claims 20-23 for being obvious over Davidson in view of Toyooka. Davidson is directed to articles made by assembling different pre-manufactured parts. Independent claim 20 is cancelled above and replaced with new independent claims 24-25 both of which clarify that the claimed articles are formed by injection molding. Davidson et al. does not disclose forming any combination of parts – e.g., feature and backing combination – by injection molding. For at least this reason, pending claims 21-26 are not obvious over Davidson et al. in combination with Toyooka.

#### **IV. NEW CLAIM 27**

New claim 27 which is dependent upon claim 12 has been added to the application. New claim 27 which is believed to be patentable over the prior art requires the resin material to have a coefficient of expansion that is similar to the coefficient of expansion of the preshaped formed metal sheet. New claim 27 finds support in the specification at least at page 14, lines 8-16.

#### **CONCLUSION**

Claims 12-13, 17 and 21-27 are believed to be patentable over the prior art. Favorable reconsideration and allowance of all pending application claims is, therefore, courteously solicited.

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